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ABSTRACT

This study investigated the relationship of kindergarten entrance age to academic achievement at the end of grades one through five, and the influence of gender, race, and family income on student achievement. A total of 185 students who attended a Cooperative Demonstrative Kindergarten during 1979-82 and remained in the Starkville (Mississippi) public school system for 6 consecutive years served as subjects. Younger students were defined as those who entered kindergarten at 5 to 5.5 years of age; older students were 5.6 years and older at entrance. Analyses were made on: (1) California Achievement Test Scaled Scores and total reading and mathematics scores for grades one through three; and (2) Stanford Achievement Test Scaled Scores and total reading and mathematics scores for grades four and five. Findings indicated no significant age differences between mean achievement scores in reading and math at the end of first, second, third, fourth, and fifth grades. Older entrants achieved higher mean scores in reading and math in grades one through three. Younger entrants caught up with or passed older entrants in reading and mathematics in grades four and five. When variables of gender, race, and family income were considered, the two age groups did not differ in achievement. However, a significant difference for gender in reading at the fifth grade level favored older females. (RH)

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THE RELATIONSHIP OF AGE ENTRANCE TO KINDERGARTEN TO ACHIEVEMENT IN GRADES ONE THROUGH FIVE

By

Pamela C. Boyd

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The admission of children to kindergarten in most schools is determined by chronological age alone. Not all children are ready for school at the same age. Determining developmental age level, along with problems that come with accepting some five-year-olds and not others, makes chronological age the easiest criterion for entrance to school. But, who and what constitutes what age is the best age for the majority of children to enter kindergarten in order to succeed in the school environment?

Child psychologists Jean Piaget, Arnold Gesell, David Elkind, and educator Raymond S. Moore have presented their views on the developmental levels of children and their relationship to school achievement. In their many writings, they view age as an important criterion on which to base academic success in future grades.

Jean Piaget, the leading developmental psychologist of our time, is noted for his theory on developmental stages and cognitive ability. The age range of seven to eleven years constitutes what Piaget calls the concrete operational stage (Piaget, 1952). During this time, the stable concepts of space, time relations, classes and combination become available to the child. As educational objectives, these concepts are useless before a child reaches this stage. During this stage it is important to introduce and provide understanding of these concepts. To force a five- or six-year-old into an academic setting which introduces reading, writing, and math without an understanding of these basic concepts is of no consequence to the child.

According to Gesell (1930), biological and practical considerations make the preschool period of human development one

of distinctive importance. He states that development is conditioned in a basic and almost curious manner by the factor of time. Gesell gives an analogy of what our education seems to be pushing for in young children when he stated that only in mythology does a fully formed, fully fledged creature spring from the forehead of a god. In nature, time is necessary for growth and maturation.

David Elkind, a controversial psychologist of today, emphasizes the importance of not rushing children into the school arena for social, psychological reasons as well or academic reasons. His book The Hurried Child (1981) stresses the detrimental effects that result from forcing children into situations for which they are not mature enough to handle. Elkind (1986) warnes that formal learning programs for the young are risks to the child's motivation, intellectual growth and self-esteem and could do serious damage to the child's emerging personality.

Raymond S. Moore in the book Better Late Than Early (1977) spoke out against early schooling. He contends that educators violate sound psychoeducational principles when early schooling is advocated. Human developmental neurophysiology supports the contention that the system is not ready at age four to six for school. After reviewing research studies undertaken by the Hewitt Research Foundation, Moore concludes that the normal child is ready for school when he reaches his integrated maturity level (IML), usually not before eight years old.

The effective age for admission to school has been an issue for centuries. The entrance age varies from state to state and according to Elkind (1986) is determined by economic, political, and social considerations much more than by what constitutes good pedagogy.

Spodek (1986) in discussing the growth of early childhood education revealed just how much a social issue early childhood education is. Only a few decades ago early childhood education existed on a comparatively modest scale. It provided preschool care for four- and five-year-olds through two different programs, nursery and day care. The distinction between the two was as different as the social-class background of the children who attended. The nursery schools were for the most part reserved for the privileged children of progressive middle-class families who were willing and able to pay tuition cost for preschool education. Day care, on the other hand, while serving children the same age, was organized to provide custodial care during working hours. Nursery schools were educational programs for privileged children. Day care ministered to the childrens' physical needs for food, rest, and protection. The two programs converged in the 1960s with the federally sponsored "war on poverty." Project Head Start was created to make educational programs available for underprivileged youngsters.

The launching of Sputnik in 1957 sparked concern with getting young children into an educational program early (Ames and Ilg, 1965). The international space race created competition with

foreign systems. United States and foreign grade levels were compared equally although there were age differences at entry to school. There was no concern for the fact that some foreign countries do not allow children to begin formal school until age seven.

The trend to extend some sort of educational experience to younger and younger children continued. According to Hedges (1977), by 1960 almost two-thirds of five-year-olds were going to school and many three- and four-year-olds were participating in private education programs. Ames (1980) reported that in the 1960s and early 1970s early entrance programs were tried but died of their own weight.

According to Elkind (1986) in the 1970s and 1980s the changing life styles of American families -- women in the work force, divorce, advanced technology -- resulted in high pressure academic preschool programs, full day kindergarten programs and early entrance age to school.

Once again educators have turned to investigating the success and adjustment of the young entrant. Age entrance remains controversial as parents, research reports, and economic, political, and social factors pull education administrators in different directions.

Studies investigating the relationship between age entrance to kindergarten and academic failure gave reason to suspect that younger entrants experience disproportionately more academic failure than did their older classmates (Halliwell, 1966;

Hamalainer, 1972; Hedges, 1977; Campbell, 1984; St. Charles Parish Public Schools, 1985; Uphoff, 1986; Milford Exempted Village School District, 1977). In reviewing research relating to chronological age to school achievement, Hall (1963) reports that the older pupils are at entrance to school, the greater their chances of success academically, socially, and emotionally.

The need for a comfortable and safe environment in which to place children during working hours along with a major "push-down" effort in curriculum across the nation may put young children at risk. Signs point to the fact that early education for two-, three-, and four-year-olds may soon be the responsibility of the public school system (Kappan, 1987). The growing number of working mothers is the strong force pushing early education in to the national agenda. Highly publicized preschool programs have also inspired business leaders and legislators to maintain that high-quality early education for all children is not an expense but a necessary investment. Others have stated that before public education gets into the business of educating three- and four-year-olds, the conflict between goals and methodology of elementary education educators and early childhood educators must be solved.

There is a danger, according to Spodek (1986) that universal preschool education when conducted under the rule of the public school will alter the character of early education. When preschools are absorbed by and appended to elementary schools, the preschools become incorporated into educational thinking and

programming concerned with academic instruction. An inspection of present kindergartens will support this idea.

According to Uphoff (1986), the "play-stuff" of kindergarten has crawled down to preschools. Five-year-olds, who once concentrated on coloring, learning to skip, and hanging from monkey bars during their first exposure to formal schooling, are now attempting to master the beginnings of phonetics and math skills that have traditionally been part of the first and second grade curriculum. Uphoff contends that many of the children who are having difficulties in kindergarten and first grade very likely have the intelligence to learn but cannot because of a lack of readiness.

John Goodlad (1984) in his book A Place Called School recommends that school begin at age four. He suggests that reorganization of the school will move the traditional twelve year instruction from ages six through eighteen to ages four through sixteen. Such plans are being suggested despite the growing number of studies which reveal that very young children are not ready for the structured environmental of most schools.

According to Ilg & Ames (1985), the earlier a child is admitted to kindergarten, ready or not, the happier the parents are. In some communities, parents and schools constantly argue about legal age entrance. In some states children are allowed to enter kindergarten as young as four years eight months old. In order to give children "a gift of time," developmental kindergartens are being implemented in states where failing,

holding back, or red-shirting a kindergarten student is not a popular practice.

The push has begun for early entrance to school. The push is happening despite the literature and research of prominent educators and child psychologists who would steer the move in the opposite direction. Educators need research data to support age entrance in relation to growth expectations. Informed pedagogy should guide educational decisions.

Deciding upon the appropriate minimum age for kindergarten and first grade is only part of the problem. Consideration has to be made as to the kind of program and curriculum content that should be implemented in the first school year. The minimum entering age of the student, as well as the range of age limits within the class, will make a difference as to what should be attempted by the student and what can be expected of him or her (Hildreth, 1946).

Statement of the Problem

The problem of this study was to determine if age at entrance to kindergarten is related to achievement at the end of grades one through five. A determination was made as to which of the following variables; gender, race, or family income discriminate between younger and older students.

Assumptions

(1) The subjects who attended the public school kindergarten were typical of all students in the school system who were of the kindergarten age during the years 1979-80.

(2) The experimental mortality rate had no effect on the characteristics of the post-experimental groups; therefore, the subjects in the study were typical of the original population.

Limitations

(1) Variables such as home backgrounds could not be controlled in any of the groups.

(2) Instructional delivery could not be controlled in any of the groups.

(3) Cognitive variables were the only variables used to assess achievement.

(4) Because of the ex post facto design, random assignment into groups could not be used.

Definition of Terms

(1) **Kindergarten:** Any planned program in which a child is enrolled during the year prior to entering first grade if the program meets five days per week for a minimum of three hours per day.

(2) **Achievement:** Achievement is the scaled score made on the California Achievement Test at the end of first, second, third grade and the scaled score on the Stanford Achievement Test in grades four and five. Achievement is defined by the scores on the subsets total reading and total math.

(3) **Younger students** are those students who entered kindergarten at an age of five years five months or younger (March 1 through August 31).

(4) **Older students** are those students who entered kindergarten at an age of five years six months or older (September 2 through February 28).

Design

The design for this proposal was an ex post facto study of the achievement scores of children who entered kindergarten at a younger age and students who entered kindergarten at an older age.

The relationship of age to achievement was examined. Access from the Cooperative Demonstrative Kindergarten data bank was secured upon permission from the Coordinator of the Early Childhood Center at Mississippi State University. Additional records of post kindergarten test information were examined with the permission of public school officials. Human subjects' release forms were signed at the time of their enrollment in the CDK.

Population and Sample

The subjects used in this study were students who were enrolled in the Cooperative Demonstrative Kindergarten in the years 1979-82 and who remained in the Starkville Public School System for six consecutive years. The total sample population consisted of 185 students. The students were five years of age on or before September 1 of the year in which they enrolled in kindergarten. The subjects represented families of diverse income and educational levels. The sample represented the racial balance of the population of the school system.

Analysis of Data

This study was designed to determine the effects of age entrance to kindergarten on achievement in grades one through five. The results of the California Achievement Test Scaled Scores for grades 1-3, total reading and total math, and the Stanford

Achievement Test Scales Scores for grades 4-5, total reading and total math, given in April of each year provided for the necessary data for the analysis.

The study investigated the relationship of gender, race and family income on achievement in younger and older students.

A repeated measure design was used to test the following hypothesis.

H_0: There will be no significant difference at the .05 level of significance in achievement scores at the end of each grade level throughout the elementary years.

A multivariate analysis was used to test the following hypothesis.

H_0: There will be no significant difference in achievement at the .05 level of significance between younger and older students throughout the elementary school years when allowing for the variables race, gender, family income or a combination of these variables.

Summary of Analysis of Data

The findings from the study were:

(1) The first hypothesis stated that there will be no significant differences at the .05 level of significance between younger

and older entrants in reading and math at the end of first, second, third, fourth, and fifth grade.

Based on the data from the repeated measures statistic, this null hypothesis was not rejected. No significant differences were found at any grade level between younger and older entrants in reading and math.

(2) The second hypothesis stated that there will be no significant differences in achievement at the .05 level of significance between younger and older entrants throughout the elementary school years when allowing for the variables of gender, race, and family income, or a combination of the variables.

Based on the data from the multivariate analysis of variance, this null hypothesis was not rejected. No significant differences at the .05 level of significance between younger and older students were found when considering the variables of gender, race, and family income. However, it was noted that a significant difference did occur considering the variable of gender at the fifth grade level in reading favoring females -- specifically older females.

Conclusions

The following conclusions and implications were made based on the findings of this study:

(1) There was no significant difference between the mean achievement scores in reading and math at the end of first,

second, third, fourth, and fifth grades when considering the younger entrants' age to be 5.0 to 5.5 years and the older entrants' age to be 5.6 years and older.

(2) Older entrants achieved higher mean scores in reading and math in grades one through three, and younger entrants caught up with or passed the older entrants in reading and math achievement in grades four and five.

(3) When the variables of gender, race, and family income are considered, the two groups of younger and older entrants did not differ in achievement. However, a significant difference did occur considering the variable of gender at the fifth grade level in reading favoring older females.

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